Istituto Nazionale di Fisica Nucleare
LABORATORI NAZIONALI DI LEGNARO

Laboratori Nazionali di Legnaro – INFN

Modeling of Laser Photoionization of Medical Radionuclides Using the Reduced Density Matrix

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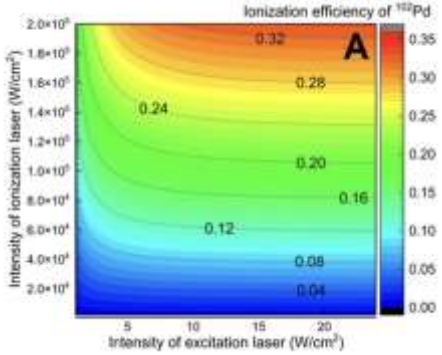
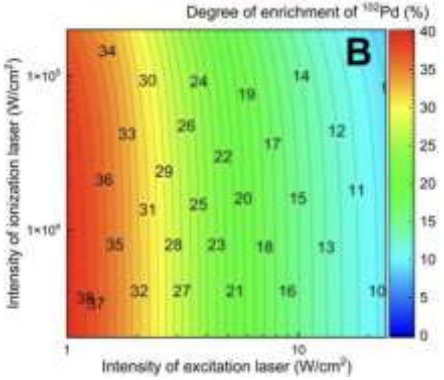
May 19th, 2025

Research Objectives

I. Investigation of the Ionization Efficiency of Gallium
II. Analysis of the Photoionization Scheme Currently Used for Scandium
III. Study of the Isotopic Selectivity of Scandium-47





In the literature

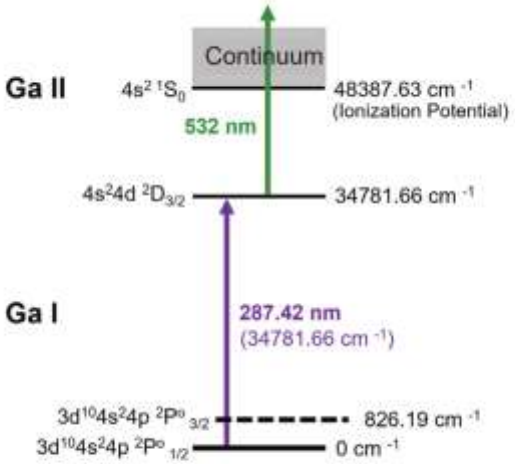


Fig. 3. Photo-ionization scheme of gallium used for ionization from the atomic ground state. The dotted line indicates the first thermally excited state. The wavelengths indicated are in air.

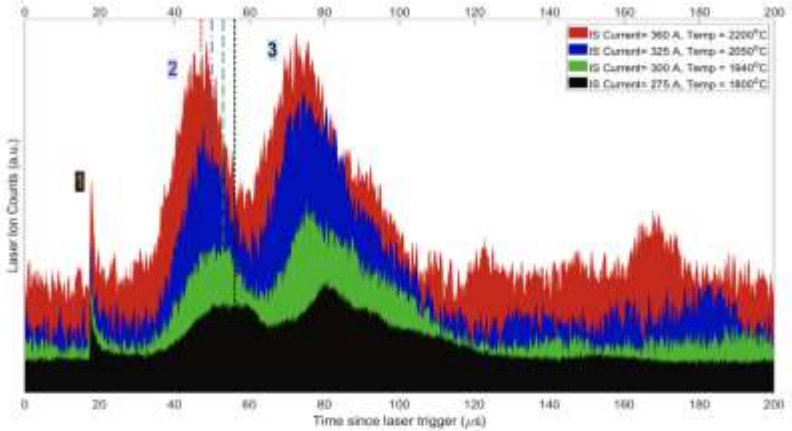


Fig. 6. Time structures of ^{71}Ga laser ions at different ion source (IS) heating currents (temperatures). Temperatures 2200 °C, 2050 °C, 1940 °C, and 1800 °C indicated in red, blue, green, and black respectively. Dotted lines indicate the centroids of the second peaks at different temperatures.